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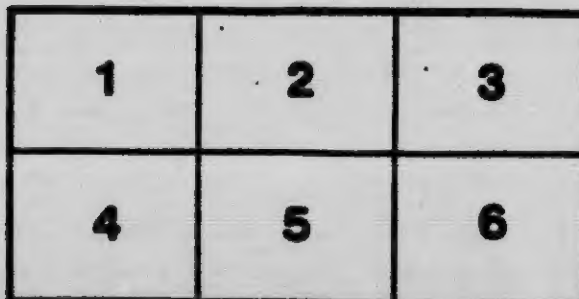
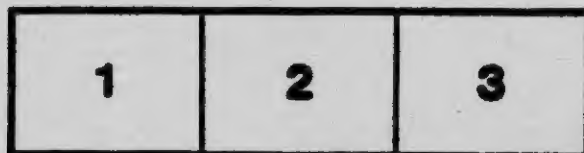
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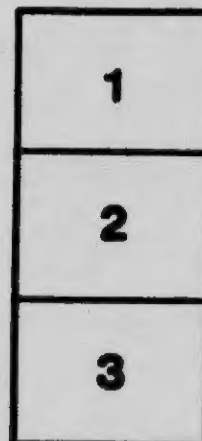
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THE
GRAND TRUNK
A · GREAT
NATIONAL
ASSET

THE STORY OF
ITS SIXTY-SIX
YEARS OF PUBLIC
SERVICE

REPRODUCED FROM
THE MONTREAL DAILY STAR

EDITORIAL

The Montreal Daily Star

"CANADA'S GREATEST NEWSPAPER."

SATURDAY, JANUARY 12, 1918.

THE GRAND TRUNK RAILWAY.

LAST year the Dominion of Canada observed its fiftieth birthday. This year one of the great railway systems of the Dominion will celebrate its sixty-sixth anniversary. Both of these are historic events, proving that this young country is growing up, perhaps not getting on in years, but at least approaching adolescence.

The Grand Trunk Railway is practically, if not actually, the pioneer railroad of Canada. Before its advent there were several small lines, now part of the Grand Trunk system, but it remained for the Grand Trunk to originate and carry through the first comprehensive transportation plan for serving the Canada of the fifties. It was a bold scheme, almost a reckless one, in that pioneer age, to link up Sarnia, Ont., with Portland, Me., via Toronto and Montreal, and to do so with a roadbed of such permanence that its standards have never been appreciably changed since. The railroad builders of those early days had faith in Canada, a faith that might shame some of those living in a more modern era.

As a pioneer road the Grand Trunk is entitled to—even if it has not always received—the fullest measure of sympathy and encouragement from the Canadian people. It is impossible to estimate the importance of the part played by the Grand Trunk in the development of this country when it was practically the only trunk line carrying goods to the Atlantic seaboard through Canada. During its sixty-six years of history it has continued adding to its system, and today when the railroads of the

entire continent are laboring under immense handicaps, congestion, lack of fuel and labor, expense and scarcity of materials, the "old Grand Trunk" is holding up its end, and winning praise for its success. That recognition, so far as the people of Canada are concerned, does not seem to be commensurate with the deserts of the company.

The Grand Trunk exercises an influence in Eastern Canada more extensive than is generally realized. The present system includes no less than 135 companies which were originally separate in legal identity. It boasts a double tracked line practically all the way from Montreal to Chicago. It has been responsible for some of the greatest public structures in the Dominion, the Victoria Bridge, the Sarnia Tunnel and others. For more than half a century it has been closely identified with the growth and business development of Canada, doing its part without ostentation, but none the less effectively. Those who invested their money in the enterprise have had to be content with meagre returns financially, and a large consciousness of public service, if that was of comfort to them.

It is well that the Canadian people should not forget the factors that have helped them along towards nationhood. The sixty-sixth anniversary of the Grand Trunk should be an occasion for a little thought as to the deserts of that fine old railroad system, an honorable patriotic corporation that has been the victim of one-half the railway legislation not only of the Federal House but of most of the Provinces—a railway that was forced to accept the handicap of an ill-considered transcontinental road engineered for party and not for patriotic ends.

THE GRAND TRUNK

CANADA'S PIONEER RAILWAY.

66TH ANNIVERSARY

A GREAT NATIONAL ASSET

THERE is no great institution in Canada to-day more worthy of the public sympathy than the Grand Trunk Railway, "the Old Grand Trunk," the pioneer railway of the Dominion. That railway system, for many years an integral part of the business fabric of Canada, is observing this year its sixty-sixth anniversary.

The design, the building up and the welding together of this wonderful structure, whose lines of steel now stretch through the country in every direction, are not surpassed in forethought, skill and human interest by any transportation concern on the American continent. A detailed recital of such would form one of the most interesting and important chapters in a complete history of Canada. Comparatively few people, it is safe to say, outside the railway community, are aware of the complexity of this great undertaking, whose name has been a household word in Canada for two generations. It may therefore be a matter of astonishment when one learns that there are about one hundred and twenty-five companies having original statutory existence, which have been merged since into this great system of transportation, and thus become parts of a harmonious whole, either through direct fusion or by long term leases for exclusive use.

Yet the Grand Trunk is taken more or less as a matter of course. Whatever the psychology of the thing, that is the fact. A railway man, talking of this very thing, said the other day:

"The Grand Trunk, in its relation to the people of this country, is like the old arm chair at home. When a visitor comes in you show the latest piece of furniture in the house, and extol its beauties. But when you are looking for a quiet rest you sit in the old chair. You enjoy its comfort and then you forget all about it until the next time you want to use it. Same thing with the Grand Trunk."

CANADA'S PIONEER LINE.

Seeing that it was practically, if not actually, Canada's pioneer line, the history of the Grand Trunk is the story of early day railroading in the Dominion. One of the most interesting epochs in Canadian history is that in which transportation by rail was first mooted and became an active, living reality. During this period many economic changes and improvements were accomplished in Canada. The whole municipal system was thoroughly organized, education was placed in tune with the most approved principles, the feudal tenure in what is now the Province of Quebec, a great barrier to progress, was abolished on equitable principles, representation of the people in Parliament was reformed and extended, civil and criminal laws were revised, amended and coded, reciprocal free trade in natural products was established with the United States, and the canal system perfecting the navigation of the St. Lawrence was completed. In the year 1846 there was in reality only one railway, of 16 miles in length, in the whole country, but in about a decade after that there was completed and in operation about 1,750 miles, of which the main trunk line was that of the present Grand Trunk Railway, by which the trade of the Great Lakes was secured and brought to the Atlantic at Portland, and to the ports of Montreal and Quebec for export overseas.

THE GRAND TRUNK RAILWAY

In retrospect the names of the great men who projected railway enterprise in Canada, and whose farsightedness, keen business sense and indomitable pluck placed it on a recognized firm footing, stand out in relief among those whose eminent political abilities contributed in the advancement of the country to its proud position of to-day.

POPULATION AND DEVELOPMENT.

Increase in the population of a country and development of its transportation facilities are generally coincident, and examples of such coincidences are plainly to be seen in Canada and the United States, where it has been evident that material progress in every branch of industry and in the higher ideals of social economics has been furthered more by means of general transportation than by any of the other projects of the arts and sciences. For over a century the tide of immigration from congested portions of Europe flowed to the North American continent, but the direction of the stream of population was more to those latitudes which tradition or such literature as existed at the time proclaimed as the only livable regions for white races. As a result the United States during the nineteenth century grew from small beginnings to be one of the greatest nations of the world. During the first half of that century, Canada remained somewhat dormant in the matter of population and consequently in commercial progress, a result of the then existing ignorance of her resources and possibilities. The sequel was inertness in the provision of means of transportation commensurate with the wealth of the country in natural resources. Such a state of affairs was not surprising when it is considered that in that period, if information was wanted about Canada, the inquirer had generally to strike a mean between stories quivering with the light of a fairyland Eldorado and those dealing with snow and blizzards and freezings-to-death. He had to choose between too highly colored literature on the one hand, and on the other, the crudely expressed contempt of people who had perhaps visited the country but took neither time nor pains to discover the truth about it.

In Great Britain, the first real railway, the Stockton and Darlington, was constructed and opened for traffic in 1825, but generally speaking, not only in Britain but in parts of Continental Europe, the period from 1840 to 1845 showed the most marked activity in railway construction. Soon afterwards similar projects were mooted for Canada.

FIRST CHARTER IN 1832.

In connection with the earlier period, however, it may be recorded that as far back as the year 1832 a charter was granted in Canada for the construction of a line from Laprairie to St. Johns (now part of the Grand Trunk system) and this line was opened for traffic in 1836. This particular line was then known as the Champlain and St. Lawrence Railroad, but ultimately, through a series of transfers and amalgamations, it became in control and ownership part of the Grand Trunk.

The Champlain and St. Lawrence Railroad was built with the object of making it an important link in the chain of communication then partly existing between Montreal and New York by means of the water route of Lake Champlain and the Hudson River. It was one of the earliest, if not the very earliest, of the experiments in railway construction in Canada. It should be taken into account that in 1836, when this line was put in service, there were only 1,100 miles of railroad in the whole of the United States. Part of this line, from Laprairie southwards for a distance of about five miles, was disused after the extension of the railway from the latter point to St. Lambert in 1852.

SIXTY-SIXTH ANNIVERSARY



TYPE OF GRAND TRUNK LOCOMOTIVE IN USE 1853

About ten years subsequent to the opening of the Champlain and St. Lawrence certain railway projects began to take practical shape in the western part of what was then known as Upper Canada, part of the present Province of Ontario.

In 1845 the St. Lawrence and Atlantic Railroad Company was chartered to construct a railway from a point opposite Montreal (Longueuil) to the boundary line between Canada and the State of Vermont. In the charter mention is made that the road is to connect at the boundary line with the Atlantic and St. Lawrence Railroad, to be constructed from Portland in the State of Maine. The Legislature of the State of Maine had, during the session of 1845, previously passed an Act similar in its provisions for a railroad from Portland towards that boundary. By the two Acts, the entire line between the St. Lawrence and the seaboard came under the control of these two corporations. The requisite stock was subscribed, and in the spring of 1846 a committee of directors from both companies met and entered into an agreement on the part of their respective corporations with reference to the execution of the surveys, determination of the point of junction of the two roads, and uniformity in the general plans of construction. The surveys and location commenced almost simultaneously at both ends of the joint line. The necessary legislation for the line was subsequently passed by the Legislatures of the States of New Hampshire and Vermont respectively.

GREAT UNDERTAKING APPRECIATED.

These features are mentioned with a purpose. The fact that the legislatures of the province and of the various states through which the joint roads were to pass granted the charters and privileges practically as a unit is proof that they took an enlightened and comprehensive view of the importance of the great undertaking. Friends of the enterprise availed themselves of these privileges by subscribing liberally to the stock, and arriving at an understanding regarding construction and management of such a character as to render the two railways identical in interest and virtually one railroad.

These undertakings were entered into in order to give Montreal and the West direct communication by rail with the seaboard, and to give Portland and other eastern points a direct route to the west by way of Canada. The superior harbor advantages of Portland were recognized even at that early period, and it was then expected that they would render that port one of great importance to the future

THE GRAND TRUNK RAILWAY

railway system of Canada. These views were shared by the projectors and owners of a fleet of vessels known later as the Montreal Ocean Steamship Company, and still later as the Allan Line, whose attention was early directed to the many advantages of Portland for serving Canada during the long winter season, when navigation was totally suspended on the St. Lawrence.

The late Sir A. T. Galt, at one time Minister of Finance of Canada, was closely identified with the promotion of the Montreal-Portland line, and there is a deep water wharf and a substantial row of warehouses alongside the docks in Portland which are still known as the Galt Wharf and the Galt Block respectively.

BIG RAILWAY PERIOD 1853 TO 1856.

But the real period during which railway construction in Canada had its serious beginning was from 1853 to 1856—and it was during this period the parent stem of the Grand Trunk acquired definite existence and ultimately led to the building up of the present great system, which has become one of the most important carriers of commerce on the continent.

In the year 1851 an Act of the Province of Canada was passed, the general terms of which approved the idea of a main trunk line of railway throughout the length of the province, and also from the eastern frontier thereof through the provinces of New Brunswick and Nova Scotia to the city and port of Halifax. The next year another Act was passed recognizing the advantages to the province of such main trunk railway being under the management and control of one company, or of as small a number of companies as might be practicable. By this last-mentioned Act, provision was made for any two or more companies, formed or to be formed, which would become part of the main trunk line of railway, to unite together as one company, or for any one of them to purchase the property and rights of any one or more of such companies. The provisions of the Act applied also to the St. Lawrence and Atlantic Railroad.

In the year 1850 a charter was granted for the construction of a railway to be known as the Quebec and Richmond Railroad, from a point opposite the city of Quebec to Richmond on the St. Lawrence and Atlantic Railroad. This line, which was opened for traffic in 1854, became the means of substantially developing the city of Quebec, which had been without railway facilities of any kind. Quebec was a Mecca for tourists from the United States, but these had formerly to proceed to that city from Montreal, and return to the latter city by steamboat. The opening of the Quebec and Richmond enabled them to go by railway between Montreal and Quebec by day, and in five and a half hours, instead of the night steamboat journey of fourteen hours to which they had been accustomed previously. It is difficult to-day to imagine the isolation of the city of Quebec in the winter months previous to the advent of this railway.

SEVERAL OTHER CHARTERS.

In the period previous to 1852 charters were obtained for the construction of several other railways, known respectively as the Grand Trunk Railway of Canada East, the Montreal and Kingston, the Kingston and Toronto, and the Toronto and Guelph—the latter having power of extension to Sarnia. These several projects were entered into with the ultimate object of union, and as they were to become part of the main trunk line of railway already referred to, they were amalgamated by Act of Parliament, dated December 18, 1854, under the name of the Grand Trunk Railway of Canada. They were opened for traffic in various sections between 1854 and 1860, the act of incorporation of the Grand Trunk Railway Company of Canada having been passed on November 10, 1852. The section from Montreal to

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GRAND TRUNK PASSENGER LOCOMOTIVE 1870

Brockville was opened in 1855, Brockville to Toronto in 1856, Toronto to Sarnia in 1856, Richmond to Point Levi (opposite Quebec) in 1854, Point Levi to St. Thomas (Montmagny) in 1855, and St. Thomas to Riviere du Loup in 1860.

During the early struggles of the company for existence, many materials of construction had to be imported from Britain under conditions very different to those prevailing to-day, and the obstacles to be surmounted were further accentuated by the outbreak of the Crimean war, at a time when it was essential to the building of the railway that the company should have the most favorable opportunities for financing the enterprise. As a result of the Crimean war financing became almost impossible, and it was little short of a marvel that with practically no Government assistance the Grand Trunk Railway was pushed through to completion.

Notwithstanding such adverse circumstances, the various works were carried out by the contractors who undertook them with energy and ability, and in some sections with extraordinary rapidity. Besides inclement and diversity of climate which had to be contended with, the greater part of these works were carried out through territory defective in means of internal communication and in those facilities to which the contractors had been accustomed in previous construction in other countries.

TWO FIRMS OF CONTRACTORS.

For the building of the Grand Trunk there were two firms of contractors, one known as the "English contractors," consisting of Messrs. Jackson, Peto, Brassey and Betts, who constructed the lines from Montreal and Toronto and from Richmond to Riviere du Loup, the other a Canadian firm, Gzowski & Co., known as the "Canadian Contractors," who built from Toronto westward to Sarnia. The nature of the contracts which the English firm had,—provided that the railway should be superior to any American or Canadian railway then existing, and stipulated the best English railways as the standard for substantiality and permanence. The contractors were given the selection of the line, subject to the approval of the Government, and the contracts also provided limitations as to gradients and curvature.

These English contractors had previously been engaged in extensive railway construction in Great Britain and on Continental Europe, and their ability and capacity were generally recognized, not only in regard to engineering qualifications, but also in respect to financial standing and influence. Everything then was in a sort of experimental stage in Canada, and it was therefore deemed expedient to make a contract with one firm to make the surveys, acquire the lands and lay out and

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construct the line east of Toronto, at a rate which would, by their own estimate, give them a profit similar to that which they had made in Britain and on the continent of Europe.

The contract with the Canadian contractors was similar in character to the other in its general terms, that is, it implied a first class line, but omitted any special reference to the English railways. Both of these firms did their work well, and the style and design of roadway as then constructed proved sufficient in cross sectional area to remain the standard through the years since. This fact, together with the small degree of curvature adopted as the maximum in the alignment, has preserved to the Grand Trunk the original conditions of excellence for train movements for which the road was designed, and for which the English roads were noted, despite the fact that motive power and other rolling stock have in modern times so greatly increased in weight. Many roads in the United States, constructed in the same period as the early Grand Trunk, were built with much narrower width of roadway and with less favorable standards of limitations in curvature and gradients, but their upkeep in its many ramifications of expenditure created for them a perpetual burden in maintenance charges.

NO FEAR REGARDING TRAFFIC.

In the early days there never was any fear as regards the amount of traffic to be obtained from the West, as it was only limited by the carrying capacity of the road, but westbound traffic from Quebec and Portland was a source of anxiety, as it was impossible to secure a balance of traffic or equitable return loading.

Business in the country was varied and fluctuating. During certain portions of the year there was all the traffic that the power could handle. At other times the trains ran light. Further, there was the fact that the character of the traffic was such that on portions of the road a certain number of trains were required, even if the business was light, and therefore the relative cost of maintenance was unavoidably high.

In spite of these drawbacks, the great pioneer line, represented by the amalgamated roads, went steadily through an evolutionary process in manner of operation and system of maintenance by which it reached a national and important status, as well as a high state of efficiency, not simply in regard to the territory which obtained from it facilities in transportation, but in reference to all conditions under which these facilities were secured. The experience acquired by that process of evolution was no doubt a continual financial charge, and in some instances it was acquired at high figures, but it was experience by which the lines that followed those of the early days have largely profited.

Notwithstanding every cause of political and other embarrassment and anxiety the road steadily improved in stability and fully demonstrated the views of its promoters in regard to its necessity and value as a great national highway of communication. However, it soon became apparent that although Sarnia was its nominal western terminus the city of Detroit, 60 miles south-west of Port Huron (opposite Sarnia), ought to be its real terminus, as that city was then connected with Chicago and the west by several routes. A company was accordingly organized under the name of the Chicago, Detroit and Canada Grand Trunk Junction Railway Company, and this company obtained power from the State of Michigan for the construction of the necessary road. This special authority was necessary, as the Grand Trunk itself held no statutory rights in the United States.

The gauge of the track of this portion was fixed at four feet eight and a half inches, which was similar to that of the American lines terminating in Detroit, and conformed also to the the general American standard. The gauge of the Grand

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GRAND TRUNK STANDARD PASSENGER LOCOMOTIVE 1917

Trunk in Canada had been previously fixed by the promoters and the Government at five feet six inches. The line between Port Huron and Detroit was constructed by Messrs. Gzowski & Company, who had built the road from Toronto to Sarnia. It was leased by the Grand Trunk for 999 years from the year 1859. In connection with this section, slip docks were established at Port Huron and Sarnia respectively, and commodious car ferry steamers were placed in service between these points to transfer freight cars across the St. Clair River. At Sarnia, complete appliances were provided for storing, elevating and transshipping the produce thus transported.

An acquisition of the Grand Trunk in 1858 was the railway from St. Mary's to London, twenty-two miles, which had been chartered in 1856 as an independent concern, called the London and Grand Trunk Junction Railway Company. After construction it was bought by the Grand Trunk Railway Company in order to obtain for the latter a share of the traffic of the large section of country of which London is the centre.

TRACK OF TWO GAUGES.

In 1864 a third rail, laid inside the five feet six inches gauge, was placed in the track between Sarnia and Buffalo, via Stratford, and this enabled cars of the four feet eight and a half inch standard gauge to travel from Chicago to New York through Canada, and obviated the previous necessity of breaking bulk.

As has been stated, the promoters of the Grand Trunk and the Government had decided that the gauge of the railway should be five feet six inches. The difference between it and the American standard subsequently caused much inconvenience to traffic, both passenger and freight, to and from the United States, and despite the partial remedy of the third rail on some parts of the line, hampered the movement of international traffic through the necessity of transshipment at frontier points. In 1872 the St. Mary's-London branch and the line from Sarnia to Buffalo via Stratford were changed from the broad to the standard gauge. In 1873 the line from Stratford to Montreal, 421 miles, was similarly changed, and the balance of the line east of Montreal was changed in 1874. The Montreal and Champlain Railway, south of Montreal, purchased by the Grand Trunk in 1872, was originally constructed of the four feet eight and a half inches gauge and therefore did not require alteration.

So complete were the arrangements for carrying out this work of changing gauge that the actual narrowing of the track itself caused a delay to traffic of but a few hours on each section. In the intervals between the changing of these several

THE GRAND TRUNK RAILWAY

sections the expedient was adopted of lifting the bodies of cars off their broad trucks and replacing them on standard ones, and vice versa. This and all other methods for relieving the situation were expensive undertakings, and frequently proved uncertain and insecure. It was therefore a most important event when all the Grand Trunk lines and the equipment thereof became standard gauge. One hundred and fifty new locomotives were bought at this period on account of the changed conditions. Some of the old ones were converted and others were sold.

It if had not been for the means provided to renew the line as was done in 1872-73-74, that is, to change the gauge and renew the rolling stock, the railway would never have been able to get through the great commercial and industrial crisis of that period, for in addition to the crisis itself there was a rate war waged by all roads running to the seaboard. This war was especially felt by the Grand Trunk, for it was on the transport of through business that the road at that particular time mainly depended for revenue, and the ruinous war was carried on very fiercely against it by some of the American lines.

AMALGAMATION WITH GREAT WESTERN.

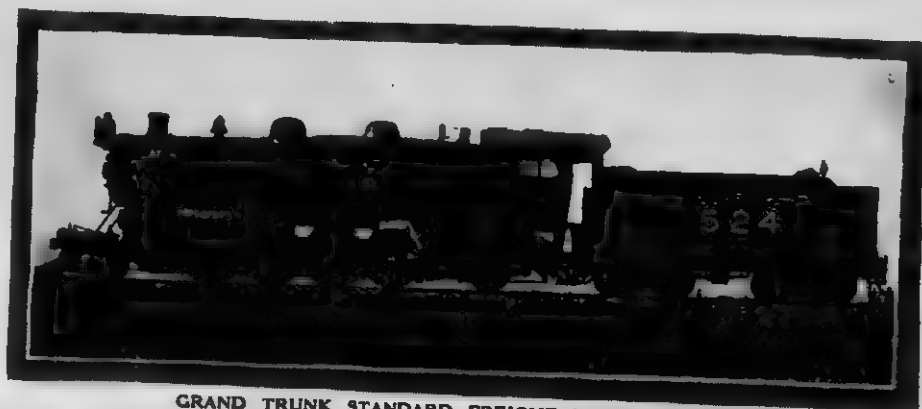
Various negotiations had taken place from time to time with a view to agreements tending to better relations between the Grand Trunk Railway and the Great Western Railway, which would effect savings in their respective expenses and consolidate their interests respectively, as well as provide more equitable facilities for the public in general. These negotiations, however, were not wholly satisfactory, and it was a source of much satisfaction to both companies when, after much previous discussion between the shareholders of each company and their final approval, the two lines were amalgamated on August 12, 1882, under the provisions of a deed of union, dated May 25, 1882. The name of the united companies was fixed as the Grand Trunk Railway Company of Canada. Through this fusion, 823 miles were added to the Grand Trunk system.

It having been realized that the Grand Trunk could afford better facilities for the development of the territory served by the Northern Railway, and the Hamilton and North-Western Railway respectively, and that expenses could be reduced on certain situations where the Grand Trunk and these lines were mutually interested, these two roads were amalgamated with the Grand Trunk under a deed of union dated January 24, 1888. This system of railways, which was made up of a number of organizations of original separate corporate existence, embraced the territory between the Georgian Bay and Lake Simcoe points, and Port Dover on Lake Erie, via Toronto and Hamilton. The additional mileage thus brought in was 493 miles.

The Midland Railway Company, which was also an aggregation of many individual roads having original separate corporate existence, occupied the triangular extent of territory between the Georgian Bay, Belleville and Toronto. It embraced 473 miles and had been leased to the Grand Trunk in 1884, though finally amalgamated with that company April 1, 1893. The Canada Atlantic Railway, also an aggregation of several organizations with original individual corporate existence, and occupying the territory between the Georgian Bay and Lake Champlain by way of Ottawa and Coteau, was added to the Grand Trunk by amalgamation in 1914. It embraced 466 miles of line, and under an agreement had been in control of the Grand Trunk since 1904. By an agreement dated October 1, 1892, which was confirmed by Act of Parliament of April 1, 1893, several other smaller railways which had been operated by the Grand Trunk Railway Company were amalgamated with it and became actual parts of the system.

Of the total mileage of the Grand Trunk Railway System, namely, 4783,

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GRAND TRUNK STANDARD FREIGHT LOCOMOTIVE 1917

miles, 993 miles are in the States of Michigan, Indiana and Illinois. Part of this mileage accrued to it with the amalgamation of the Great Western,—that company having had control of the Detroit, Grand Haven and Milwaukee Ry., extending from Detroit, Mich., to Grand Haven, Mich., as well as of a line of car ferry steamers which carried the trains of freight cars across Lake Michigan between the latter point and Milwaukee, Wisconsin. In 1877 the Grand Trunk purchased the stock of the Michigan Air Line, which then extended from Lenox to Romeo, a distance of only 14 miles, and under a contract extended it to Jackson, Mich., in 1884. The whole of this branch, embracing 105½ miles, is under lease to the Grand Trunk.

INTERESTING HISTORY.

The principal line of the Grand Trunk in the western states is that corporation known as the Grand Trunk Western Railway, extending from Port Huron, Mich., to Chicago, Ill., a distance of 334 miles. This line has an interesting history. Previous to the acquisition by lease of certain existing roads and the construction of new ones, which lines were eventually used to form the Chicago and Grand Trunk Railway (the immediate predecessor in name of the Grand Trunk Western) the Grand Trunk's main connection to Chicago was by way of the Michigan Central Railroad from Detroit. It is safe to say that if the last-mentioned railroad had not been controlled by the Vanderbilt interests, the Chicago and Grand Trunk Railway would never have been built. The Grand Trunk was quite satisfied with the Michigan Central as its Chicago connection when it was an independent company, but after the Vanderbilt interests acquired control of it, the Grand Trunk was kept in a state of disastrous competition in these western states, with low rates, and had actually no security of access to Chicago. It was therefore obliged to devise an entirely independent line.

There were several individual railways in the chain which was ultimately acquired, some complete and some incomplete, as well as some links not then built, but they were eventually all forged together under a well-thought out plan devised, negotiated and arranged by the late Sir Joseph Hickson, and became a harmonious whole under the name of the Chicago and Grand Trunk Railway, and later under the name of the Grand Trunk Western Railway.

In the year 1879 the section of the Grand Trunk from Point Levi to Riviere du Loup, 124½ miles, was sold to the Government of Canada, with reservation of running rights between Chaudiere and Point Levi, for the sum of \$1,500,000, in order to make it part of the Intercolonial Railway and thus give the latter access to

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Quebec. This portion of the Grand Trunk, under the then existing conditions, had long been unproductive, and if it had been retained would have required a very large sum of money to put it into proper condition. It was sold, and the money derived from the sale was applied towards completing the line from Port Huron to Chicago. The Act of Parliament authorizing the purchase by the Government stipulated that payment of the purchase money should only be made for such purposes connected with the Grand Trunk as the Government considered to be conducive to the public advantage. It was, therefore, with the acquiescence of the Government, used in completing the independent connection with Chicago.

DOUBLE TRACKING THE SYSTEM.

On this Western section it was hardly to be expected that a series of roads already built, such as were then required, would be faultless in regard to gradients and alignment, so in order to make the enterprise physically first class, the line was double tracked by the Grand Trunk, and other betterments were made both in the nature of certain deviations and the reducing of objectionable grades. These works of improvement were completed in 1903.

As traffic developed throughout Canada, the delays and inconvenience to the travelling public as well as to shippers of freight in the more congested parts of the system in Canada necessitated doubling the track on these portions, and a great outlay was involved in this connection. At the present time, out of an aggregate of 4,783 miles in the system, 1,065 miles are double-tracked, and with the exception of the St. Clair tunnel and about five miles in the State of Indiana, there is a continuous stretch of double track from St. Rosalie, Que., to Chicago, Ill., a distance of 886 miles. Grade revisions have been made on some sections of the line in order to permit of the more economical and expeditious handling of the increased tonnage. As a typical example of such revision, the portion of the line between Port Hope, Ont., and Port Union, Ont., a distance of 46 miles, may be mentioned, as it is quite apparent to the eye of the ordinary traveller when passing over that section of the road. Here the original limiting gradients have been considerably lowered, and by means of deviations from the original alignment in certain places a large amount of curvature has been eliminated. The result has been that the same motive power can haul over this part of the road almost double the tonnage that it could formerly. These alterations involved the expenditure of very large sums of money.

The Grand Trunk possesses on its system four structures known the world over, and has a direct interest in another of equal fame. The first and most important event in the history of the Grand Trunk after it was placed on a firm footing by the Amalgamation Act was the construction of the Victoria Tubular Bridge across the St. Lawrence at Montreal, authorized by Act of Parliament in 1853. The bridge was erected during the years 1854 to 1859 inclusive. When it is considered that there were few precedents for the engineers to work upon in regard to important points connected with the construction, and that many difficulties had to be contended with for the first time, such as the force of the breaking up of the ice in the spring, the extremes of temperature, the rapidity of the current and depth of water, one is bound to acknowledge the skill of the designers and builders, especially in regard to the form and construction of the masonry piers.

It was, however, only a single-track structure. Thirty-seven years after its completion, traffic conditions and the consequent demands for heavier and more powerful rolling stock made a renewal necessary, and it was replaced in 1897-98 with double-track, modern through steel trusses. The cost of the original bridge was almost \$7,000,000 and that of the reconstruction about \$1,900,000. The original masonry piers and abutments were so substantially built and with such liberal dimensions that they required no additions or alterations to the foundations, and comparatively little extra work in order to adapt them to the new conditions.

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THE FORT ERIE BRIDGE.

Another great structure built in the interests of the Grand Trunk was the International Bridge between Fort Erie, Ont., and Buffalo, N.Y. This bridge crosses the Niagara River and is the only one with piers in that stream.

It was commenced early in 1870 and opened for traffic in November, 1873. Considerable physical difficulties were encountered by the contractors, Messrs. Gzowski & Co., in the building of this bridge, such as swiftness of current, great depth of water, extensive icefield runs, and extraordinary and rapid fluctuations in the rise and fall of the river. The river at the site of the bridge varies from ten feet in depth at the first pier from the Canadian side to forty-eight feet at the fifth pier. The cost of the structure was upwards of \$2,000,000. In order to meet increased weights of rolling stock the superstructure was replaced in 1901 by one of a more substantial character at a cost of about \$300,000. Another replacement and re-arrangement, complete in its characteristics, of the portion of the bridge across the Black Rock Harbor or Erie Canal, took place in 1910-11, by reason of the United States Government requiring an increased width of channel. This was done at a cost of about \$405,000.

This last-mentioned work was of a most interesting engineering character. It involved the substitution of one double track swing span of 219 feet in length on a new and larger pivot pier and two new abutments for the then existing spans, which consisted of a fixed one of 219 feet and a swing of 218 feet. This new structure is one of the largest double track swing bridges on the Continent. The replacement of the previous bridge took place on the existing alignment, and when it is considered that the bridge is located at the entrance to a busy passenger and freight yard, with incessant through and local traffic involving train and switching movements over it every few minutes, it is worthy of note that the engineering methods adopted in its construction were such as to permit such train service to be carried on with almost imperceptible interruption either to traffic or to the work of construction.

One of the most important structures on the Grand Trunk system is the St. Clair tunnel. This tunnel,—the first large subaqueous one in America, was constructed under the St. Clair river between Sarnia, Ont., and Port Huron, Mich., in 1888-89-90. It was opened for traffic in September, 1891. The tunnel is for single track, and exclusive of the open cuttings in the approaches on each side, is 6,026 feet in length. At first the trains using it were operated by steam loco-

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motives, but about fifteen years after it was opened for traffic it was electrified, and the motive power now used consists of powerful electric locomotives capable of starting a 1,000-ton train on a two per cent. grade. The original cost of the tunnel was \$1,460,000, and that of the electrification, including the main tracks in the terminal yards at each end, \$543,000.

With the acquisition of the Canada Atlantic the Grand Trunk became possessor of another large bridge across the St. Lawrence River, at Coteau, Que. This bridge was originally built in 1889 by the Canada Atlantic Company, at a cost of \$1,264,000, but the superstructure was replaced in 1910 by the Grand Trunk Company with a type of steel trusses of much greater capacity than the original. The cost of this replacement was \$510,000.

In connection with the former Great Western Railway, now the Grand Trunk, there was a suspension bridge across the Niagara River not far from the Niagara Falls. This structure, built in 1852, was used for Great Western and subsequently Grand Trunk traffic up to 1897, when it was replaced by a steel arch double track structure for rail, vehicular and pedestrian traffic. The upper floor is leased to the Grand Trunk, the term of the lease being the continuance of the charter of the Grand Trunk.

As nothing intensifies a truth so much as setting it in the shadow of its opposite, facilities in transportation furnished by the Grand Trunk in the early days, good as they were for the time, may well be contrasted with those enjoyed by travellers and shippers of to-day. Rails have gone through every conceivable change in shape, weight, length, material, joint and process of manufacture from the small and apparently crude rule of thumb design in iron to the scientifically proportioned shape of the heavy modern standards in steel.

Freight cars and trains are now of largely increased capacity, and these in turn required the use of more powerful locomotives, which consequently involved the renewal from time to time, with improved design and on a stronger basis, of the bridge structures.

Sleeping cars of any kind were unknown in Canada until the sixties, and it was not until 1870 that the Pullman Company began to operate sleeping cars on the Grand Trunk. Short coaches with small four-wheeled trucks, hand system of braking, pin and link couplings, uncomfortable seating and upholstery, crude systems of heating and various other now objectionable features have given way to commodious day coaches with every conceivable appointment in construction and convenience tending to the comfort of passengers. These general statements of facts connected with some of the features of the early days by no means belittle the knowledge of the great promoters and constructors of the Grand Trunk. As compared with men of to-day, they had lesser advantages for scientific training and fewer opportunities of working from precedent, yet it is a fact that much of what is in practice on the modern road was known in principle to these men. It will easily be realized that the Grand Trunk became early the backbone and framework of the country, the arterial communication between the Atlantic and the West. Its system has been the greatest contributor to the development of Canada, and the enormous amount of through traffic carried over its line from the Western States to the Eastern has proved an additional benefit to such development, by reason of increased train service through Canada, with all that means for the public benefit.

LARGE THROUGH TRAFFIC.

This large amount of through traffic has been the means of the enlargement of divisional point facilities in Canada, as well as of additional workshops, increase in administration staff, clerical help, artisans, train crews, track forces, etc. It has

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also fostered trade by the purchase of materials locally for the enterprise where such could be done advantageously throughout the country. The total capital employed in the construction of the Grand Trunk Railway by British investors has been provided at a very low cost to the company, and to its straightforward and honorable dealings since its inception, through the many adverse conditions encountered, is largely due its ability to carry out its obligations to the public. The management had ever not only the comfort and convenience of its patrons in mind, with all that involved in cost, but it held on tenaciously through many times of stress in the hopes of earning a good return for those who had invested in it and had faith in its ultimate success.

The people of Canada should be aware that they have had the full benefit of a comprehensive as well as a through line of communication in the Grand Trunk, without any cost to them, with the exception of a grant of \$500,000 towards the reconstruction of the Victoria Bridge, \$350,000 to the construction of the St. Clair Tunnel and a loan of three million pounds made in the early days,—that is, in 1853, which loan was for the object of putting the road in an advantageous condition and rendering partial assistance to the line towards Portland, a line so essential to Canada in the winter months when the navigation of the St. Lawrence was totally closed by ice. But the railway company has left nothing undone in regard to shipping facilities in the harbor of Montreal during the season of navigation. One of the greatest elevators in Canada has been erected there by the company, and the trackage arrangements in connection therewith are all conducive to the convenience of handling the shipments.

STEADFASTNESS OF SHAREHOLDERS.

It is a tribute to the shareholders and bondholders who stood by the undertaking in the early stages to say that they continued to put more and more of their money into it. For sixty-six years without intermission the company has paid its bond interest and fixed charges, but only a small return has been made to the British shareholders on the money invested by them, money which has been of immense benefit in the upbuilding of Canada.

From all that the company has done in the past and is doing now towards the advance of the country to nationhood it is only fair and reasonable that returns commensurate with the original outlay and the present high cost of materials and labor should now be received, and that when rates are established by those who have authority to do so, they should be in keeping with every element entering into original cost and present cost of operation and maintenance.

In this article the history of the Grand Trunk has been briefly given. It must not be forgotten that the "old armchair" is still making history. It is generally recognized that never in the course of its history has the Grand Trunk ever enjoyed a more practical and efficient management than at the present time.

The greatest traffic that has ever passed over its system is now being handled, and ample evidence exists to prove that the task is being carried out in a more expeditious and efficient manner than on similar American trunk lines running to the seaboard.



